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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,426	09/24/2003	Marthinus W. da Silveira	15659ROUS01U	5498

7590 10/31/2006

James A. Harrison  
P.O. Box 670007  
Dallas, TX 75367

EXAMINER

BAYARD, EMMANUEL

ART UNIT	PAPER NUMBER
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2611

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/670,426

Applicant(s)

SILVEIRA ET AL.

Examiner

Emmanuel Bayard

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14 and 21-23 is/are allowed.
- 6) ☒ Claim(s) 15-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 15-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 15 recites the limitation "the digital hybrid matrix" in line 1. There is insufficient antecedent basis for this limitation in the claim.
4. Claim 16 recites the limitation "the DHM" in line 2. There is insufficient antecedent basis for this limitation in the claim.
5. Claim 17 recites the limitation "the plurality of normalized power feedback" in line 3. There is insufficient antecedent basis for this limitation in the claim.
6. Claim 17 recites the limitation "the plurality of weighted vector " in line 4. There is insufficient antecedent basis for this limitation in the claim.
7. Claim 17 recites the limitation "the power determination module" in line 9. There is insufficient antecedent basis for this limitation in the claim.

***Allowable Subject Matter***

8. Claims 1-14 and 21-23 are allowed.
9. The following is a statement of reasons for the indication of allowable subject matter: substantially canceling the cross-correlation between input data streams present in the plurality of sector cross-correlated signals to produce a plurality of

corrected sector cross-correlated signals, wherein: the step of substantially canceling the cross-correlation substantially removes, from a single sector cross-correlated signal, the correlated components of all other sector cross-correlated signals; producing normalized power feedback signals from the plurality of corrected sector cross-correlated signals; and determining, from the normalized power feedback signals, a plurality of weighted vector values as recited in claim 1. A cancellation module operably coupled to receive  $M \cdot \sup{2}$  sector cross-correlated signals and  $2 \cdot N$  input cross-correlated signals and to produce  $M \cdot \sup{2}$  corrected sector cross-correlated signals; a power determination module operably coupled to receive the  $M \cdot \sup{2}$  corrected sector cross-correlated signals, the power determination module for producing a plurality of normalized power feedback signals from the received  $M \cdot \sup{2}$  corrected sector cross-correlated signals; and a weighted vector adjustment module operably coupled to receive the plurality of normalized power feedback signals, the weighted vector adjustment module further producing a plurality of weighted vector values, wherein the plurality of weighted vector values function to minimize undesired signal components in the plurality of sector signals as recited in claim 7. For each magnitude and phase component of each of the plurality of weighted vector values, receive a second undesired signal power level resulting from adding a second increment to each of the magnitude and phase components of the weighted vector values; and adjusting each magnitude and phase component of the weighted vector values with one of the first increment or second increment based on the increment that results in the lowest undesired signal power level as recited in claim 21.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Pinckley et al U.S. Patent No 6,983,026 B2 teaches a method and apparatus using base band transformation.

Pietrusiak U.S. Patent No 6,445,343 B1 teaches an antenna element array alignment system.

Schiemenz et al U.S. Patent No 5,834,972 teaches a method and system in a hybrid matrix.

Kim et al U.S. Patent No 7,116,723 B2 teaches a closed loop transmit diversity.

Horng et al U.S. Pub No 2004/0032910 A1 teaches MIMO systems with STTD encoding.

Derryberry et al U.S. Patent No 6,728,307 B1 teaches an adaptive antenna.

Luz et al U.S. Pub No 2003/0214355 A1 teaches a method and apparatus for error compemsation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is 571 272 3016. The examiner can normally be reached on Monday-Friday (7:Am-4:30PM)  
Alternate Friday off.

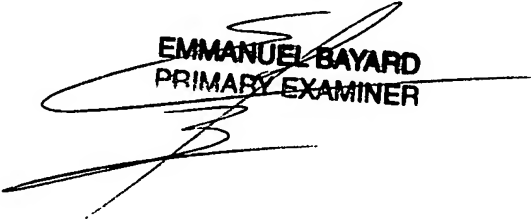
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571 272 2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2611

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Emmanuel Bayard  
Primary Examiner  
Art Unit 2611

10/27/06

  
**EMMANUEL BAYARD**  
**PRIMARY EXAMINER**